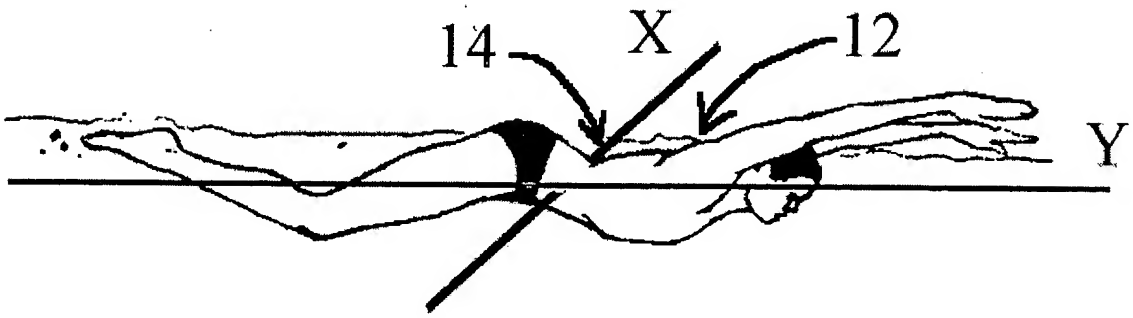


Figure 1A

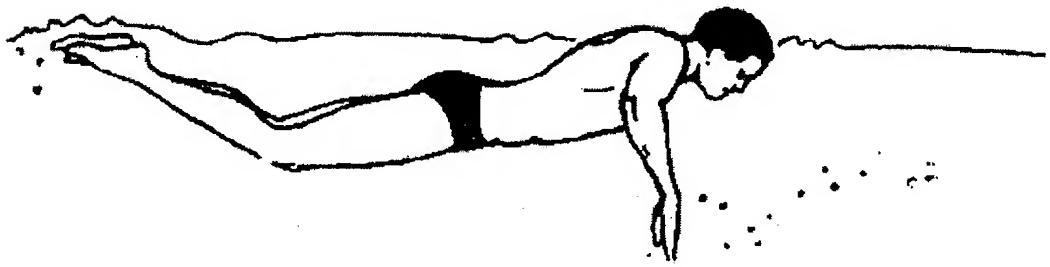


Figure 1B

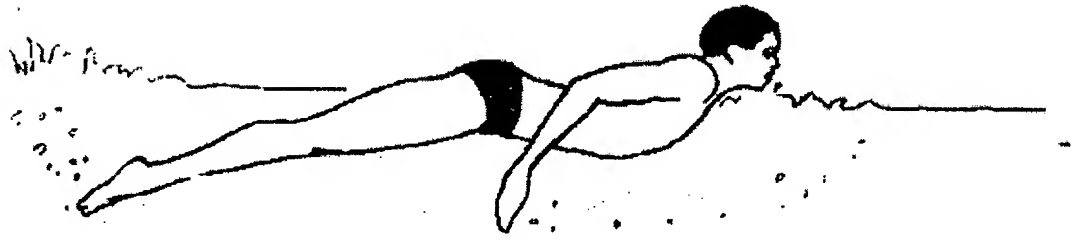
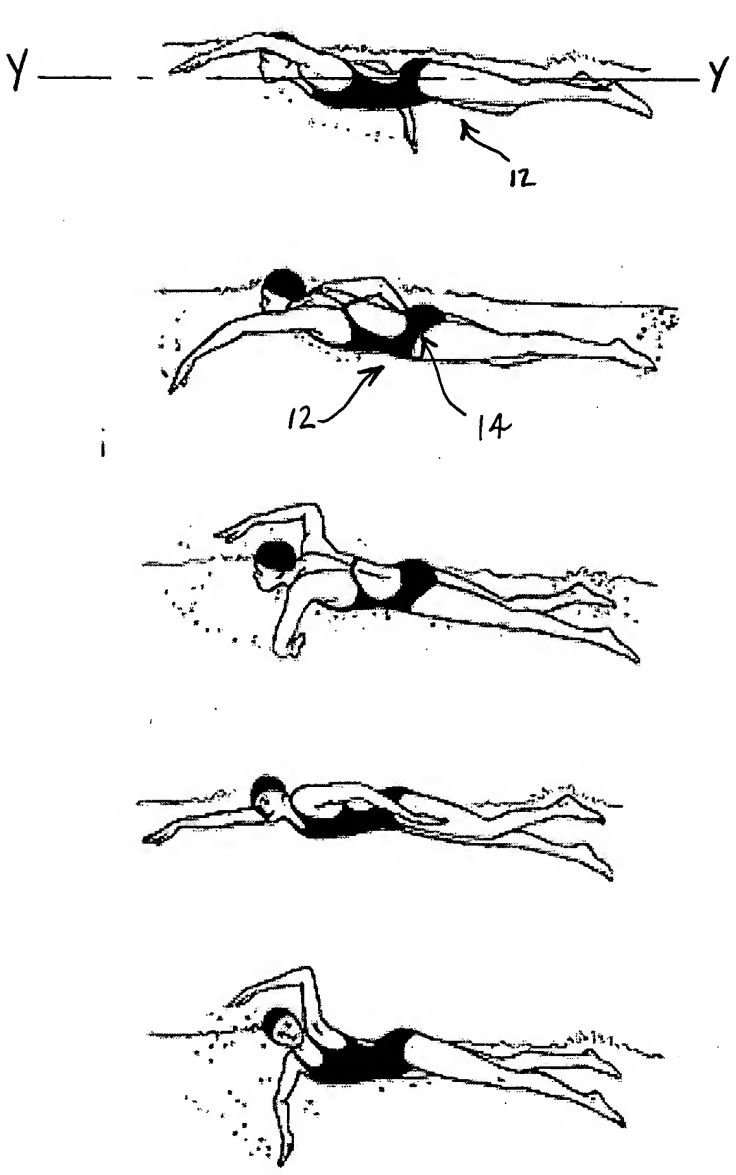
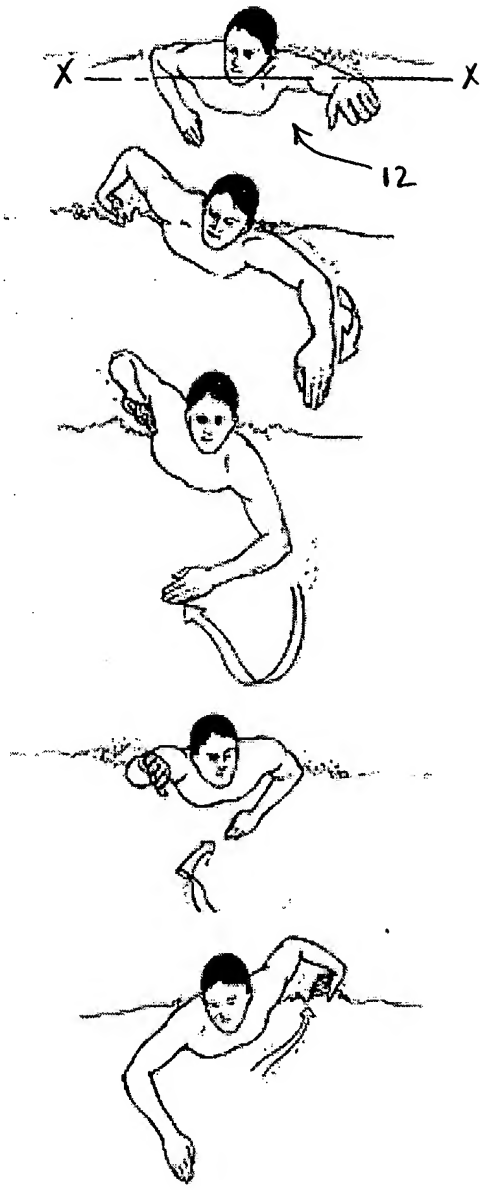


Figure 1C





Figures 2A-2E

Figures 2F-2J

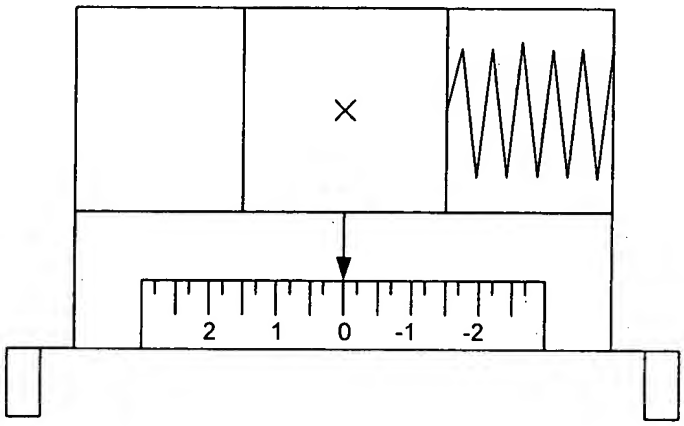


Figure 3: The accelerometer is not submitted to elongation or compression forces.

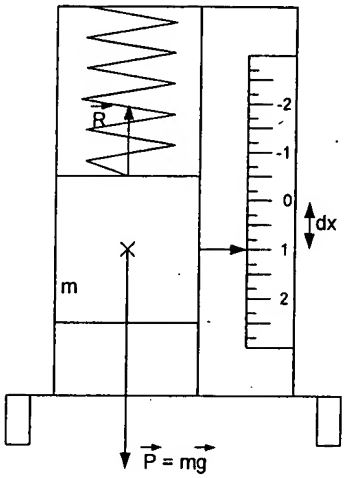


Figure 4: The accelerometer is submitted to the force of gravity (static acceleration).

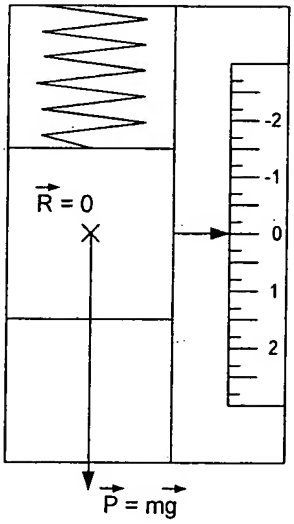


Figure 5: System in free fall

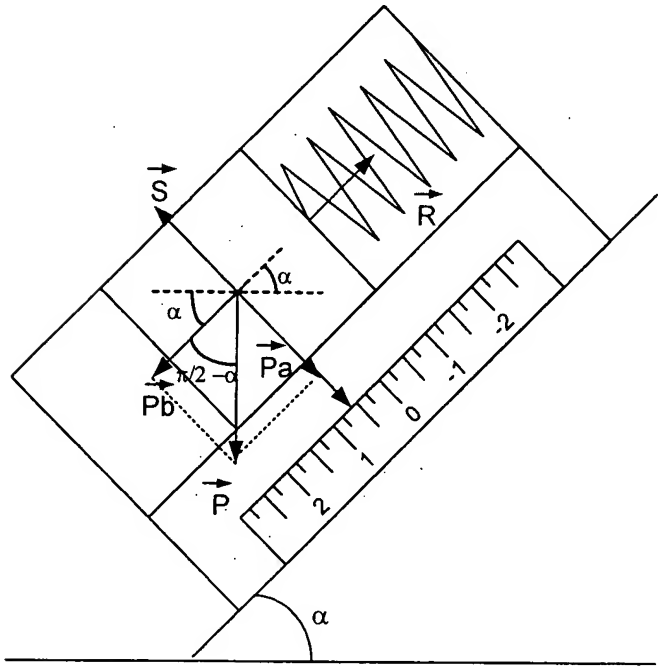
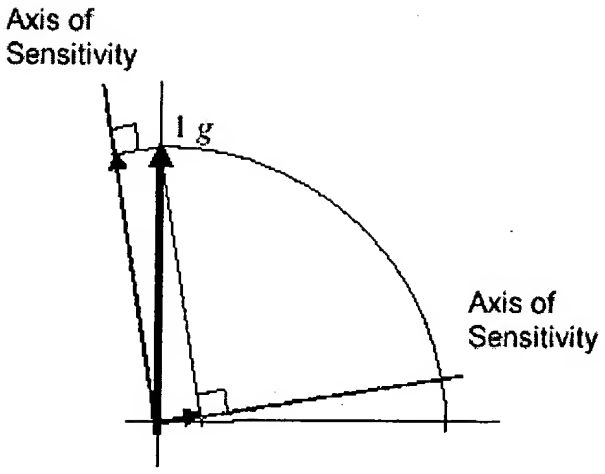


Figure 6: Accelerometer laying at an angle



Angle α	Sinus α	Δα
0	0.00	
10	0.17	0.17
20	0.34	0.17
30	0.50	0.16
40	0.64	0.14
50	0.77	0.13
60	0.87	0.10
70	0.94	0.07
80	0.98	0.04
90	1	0.02

Figure 7 Axes of sensitivity

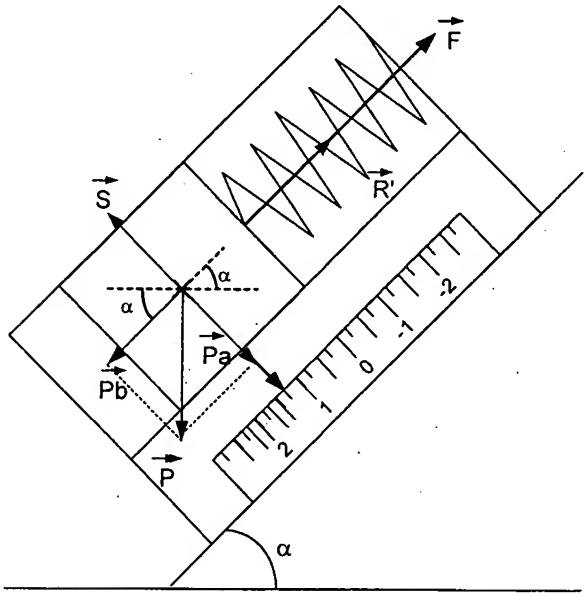


Figure 8: Dynamic acceleration applied to the system

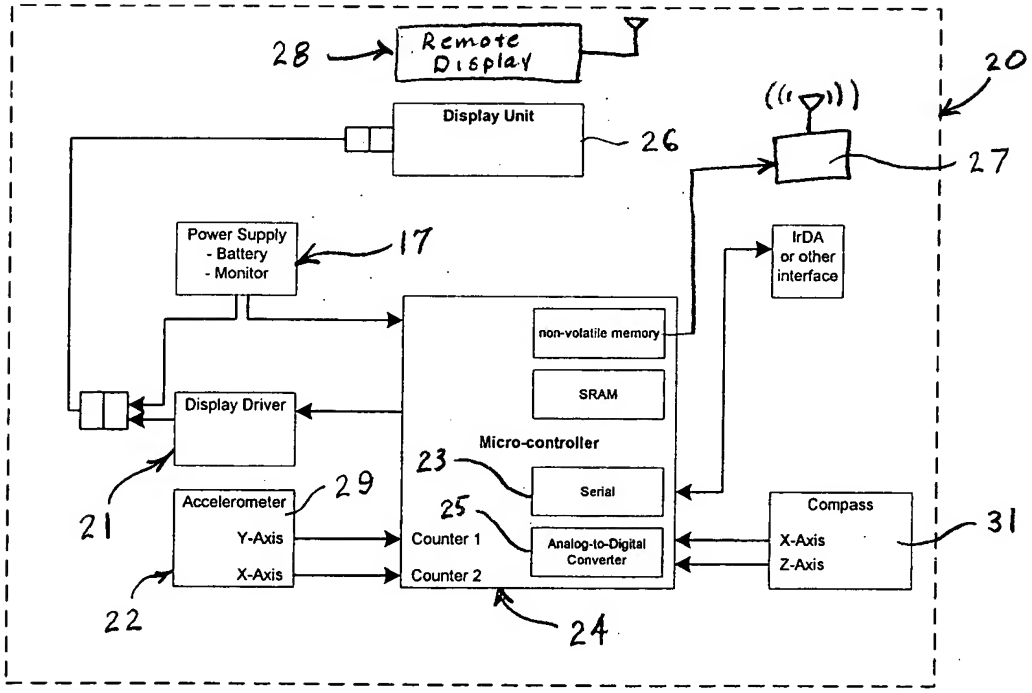


Figure 9

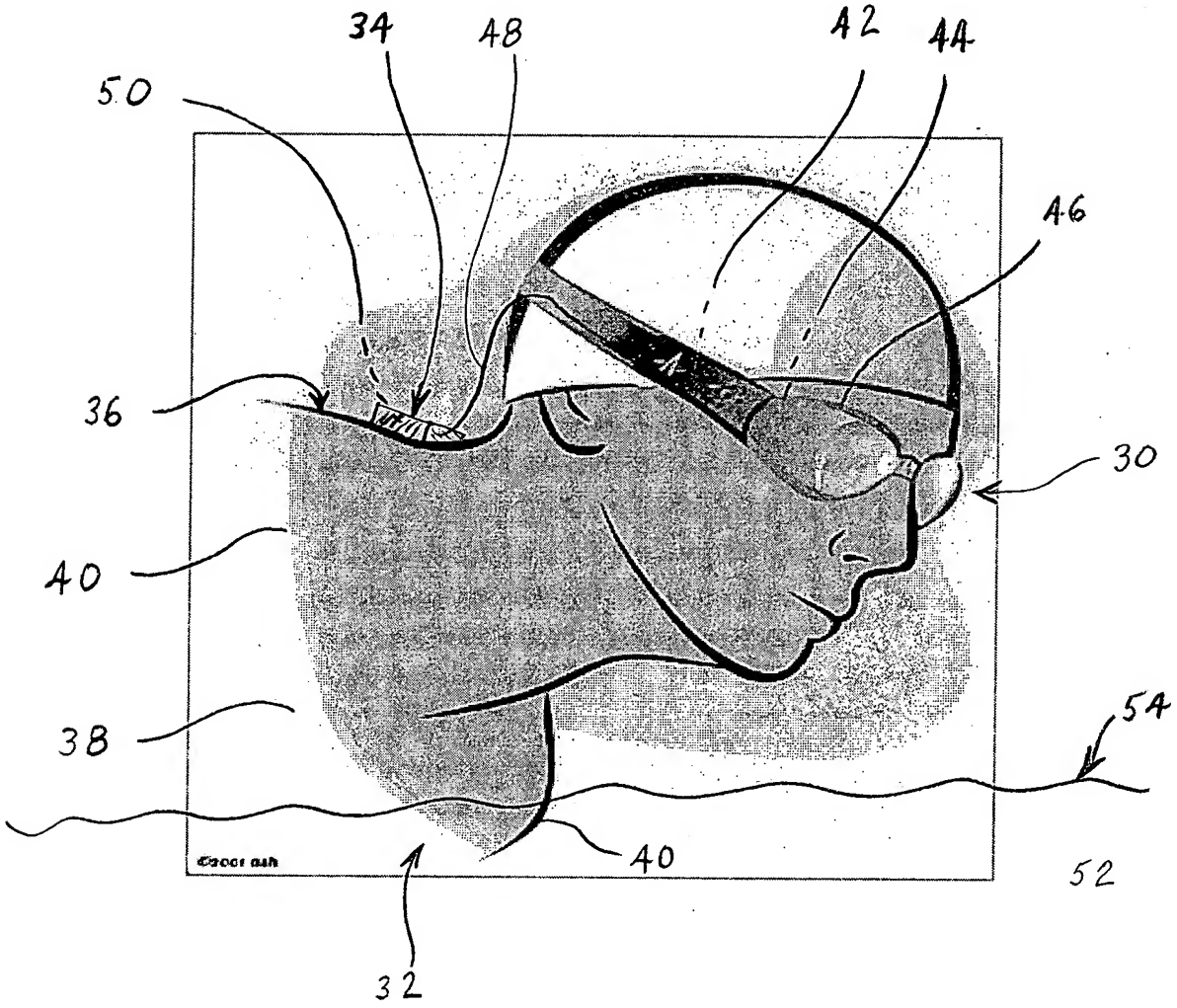


Figure 10

Butterfly

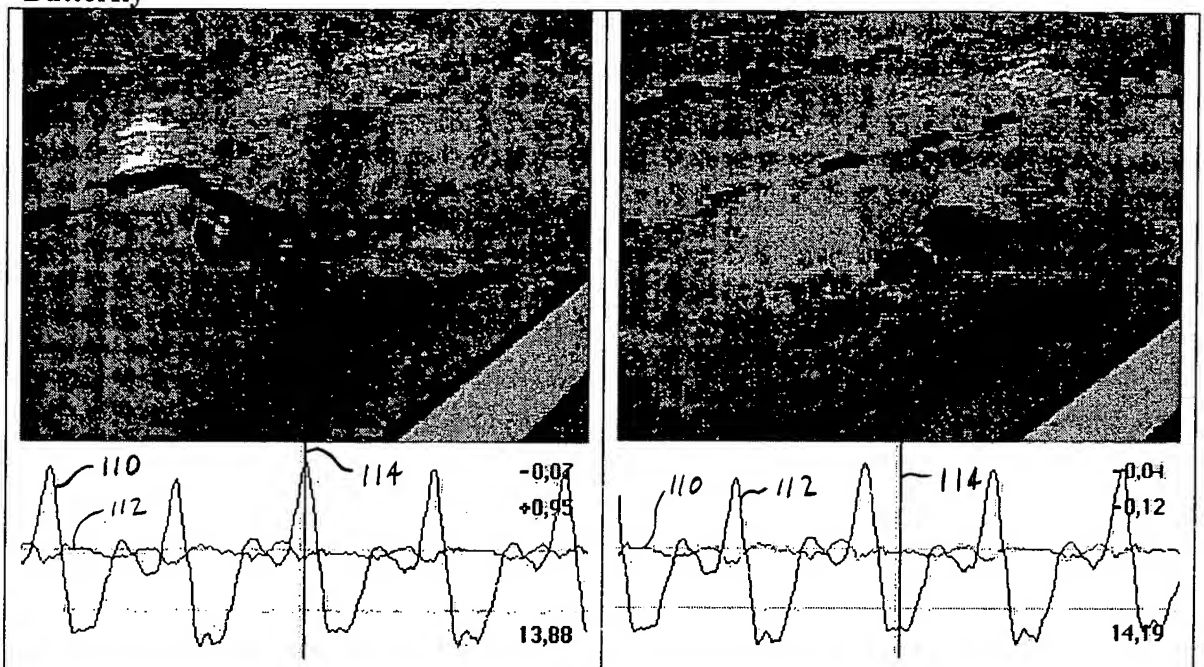


Figure 11A

Figure 11B

Breaststroke

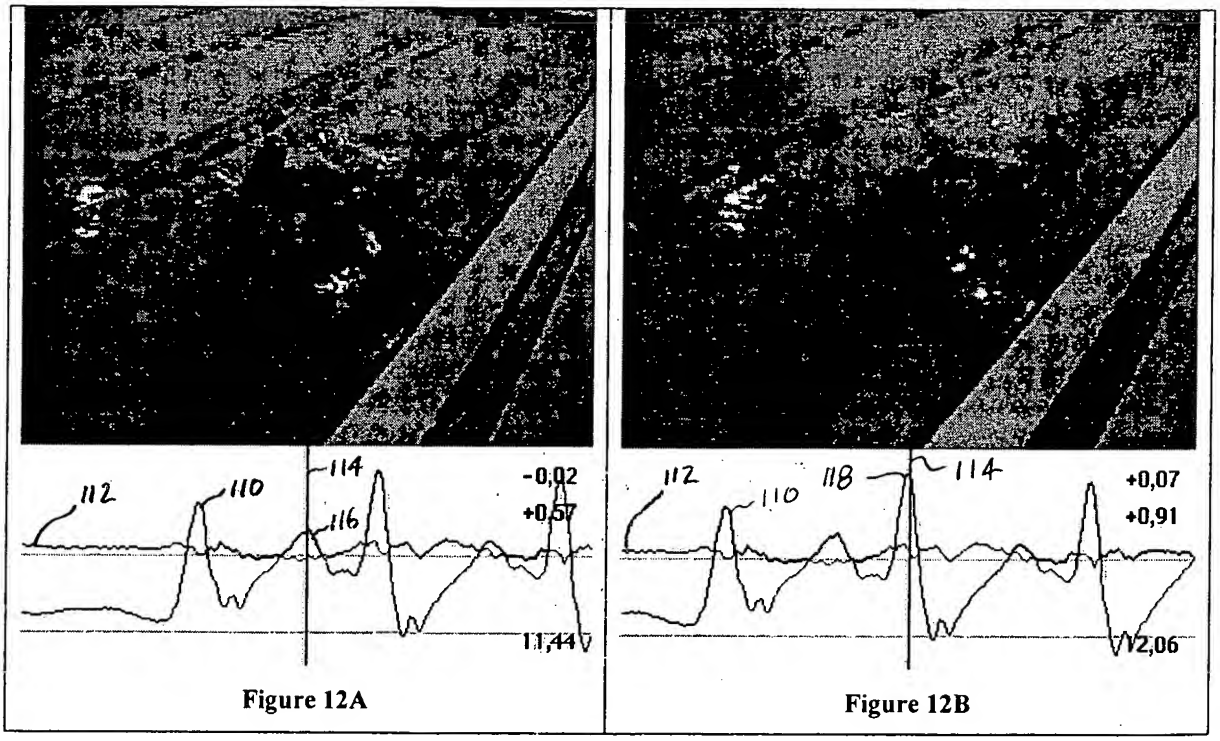


Figure 12A

Figure 12B

Crawl

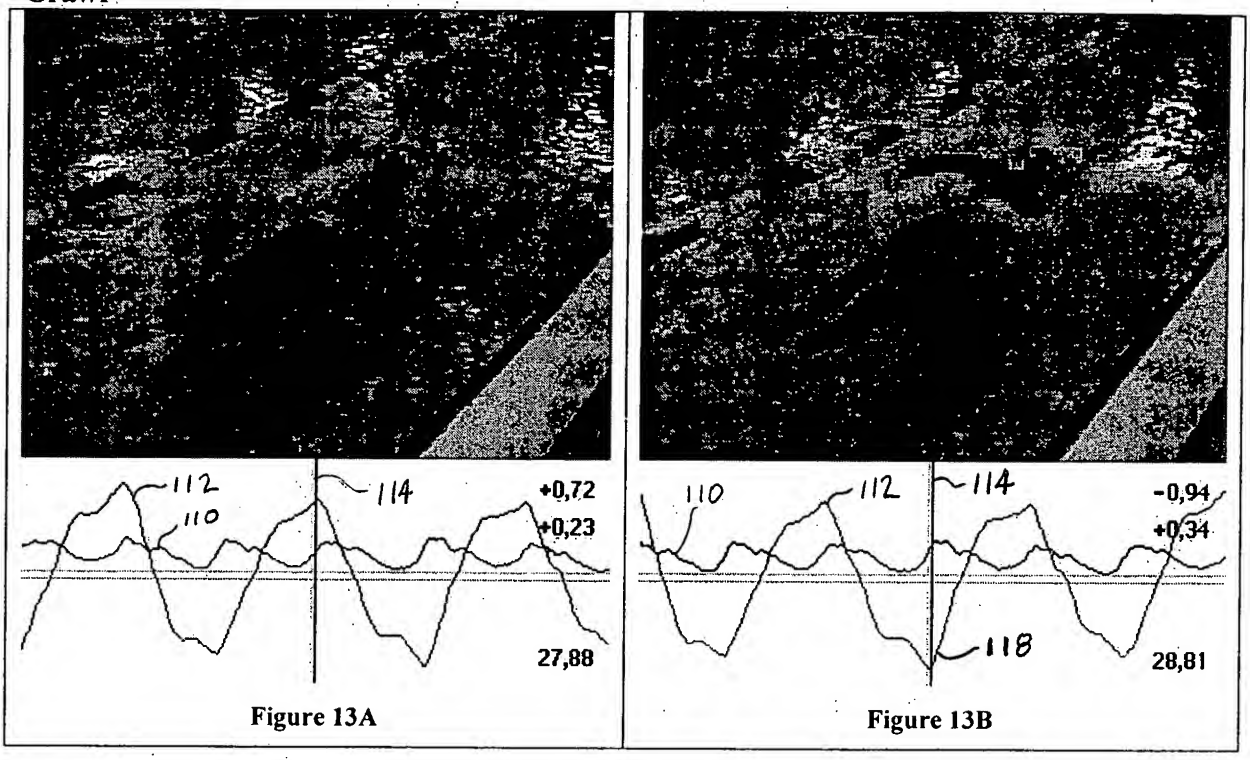


Figure 13A

Figure 13B

Backstroke

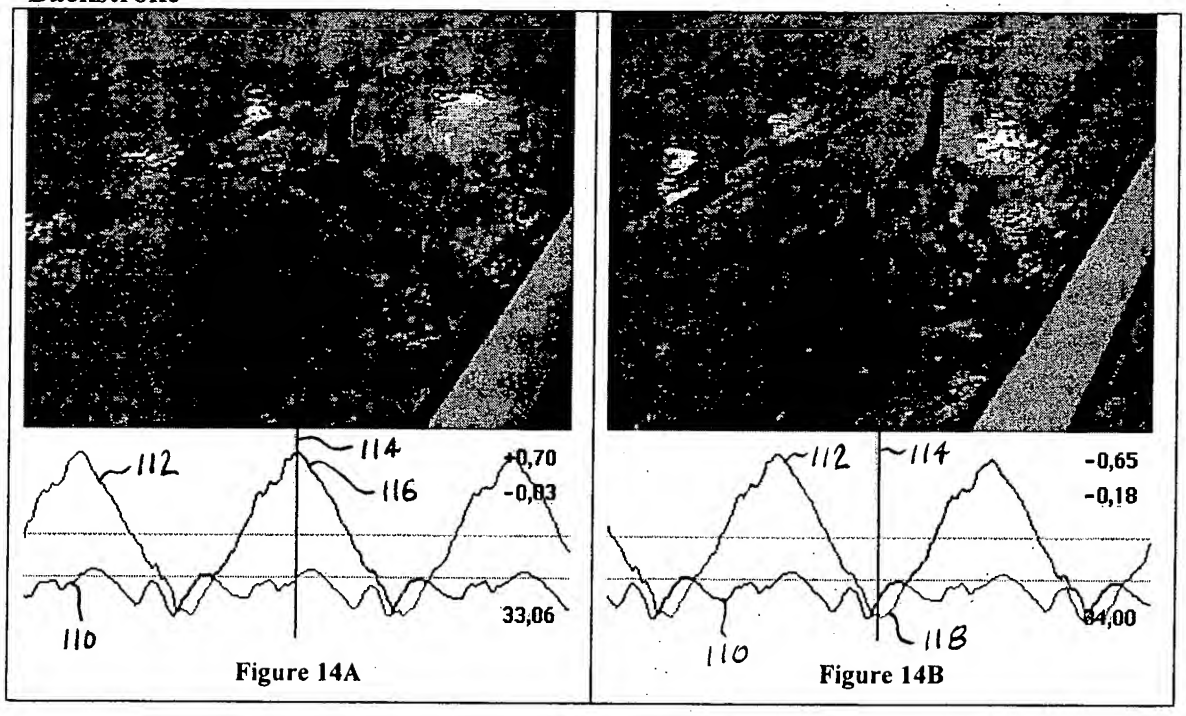


Figure 14A

Figure 14B

Starts and turns

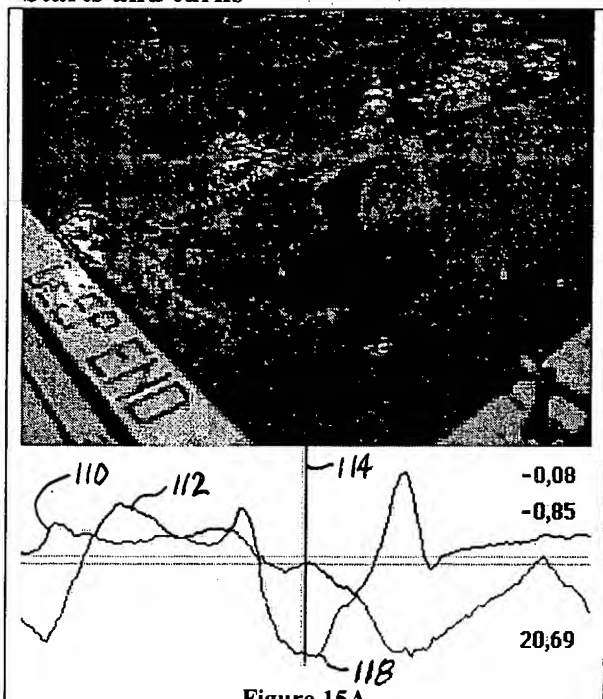


Figure 15A

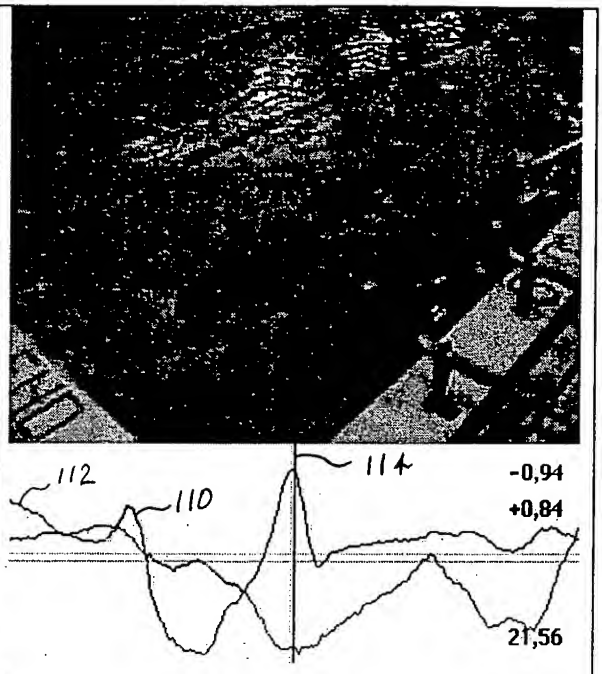


Figure 15B

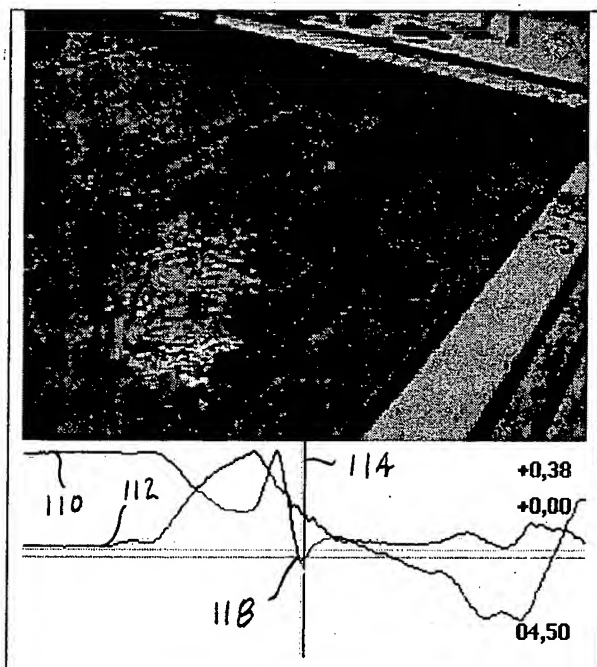


Figure 16

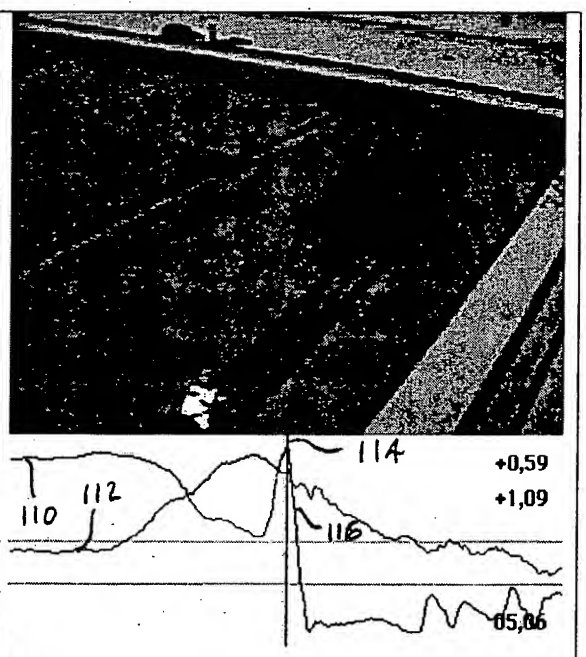


Figure 17

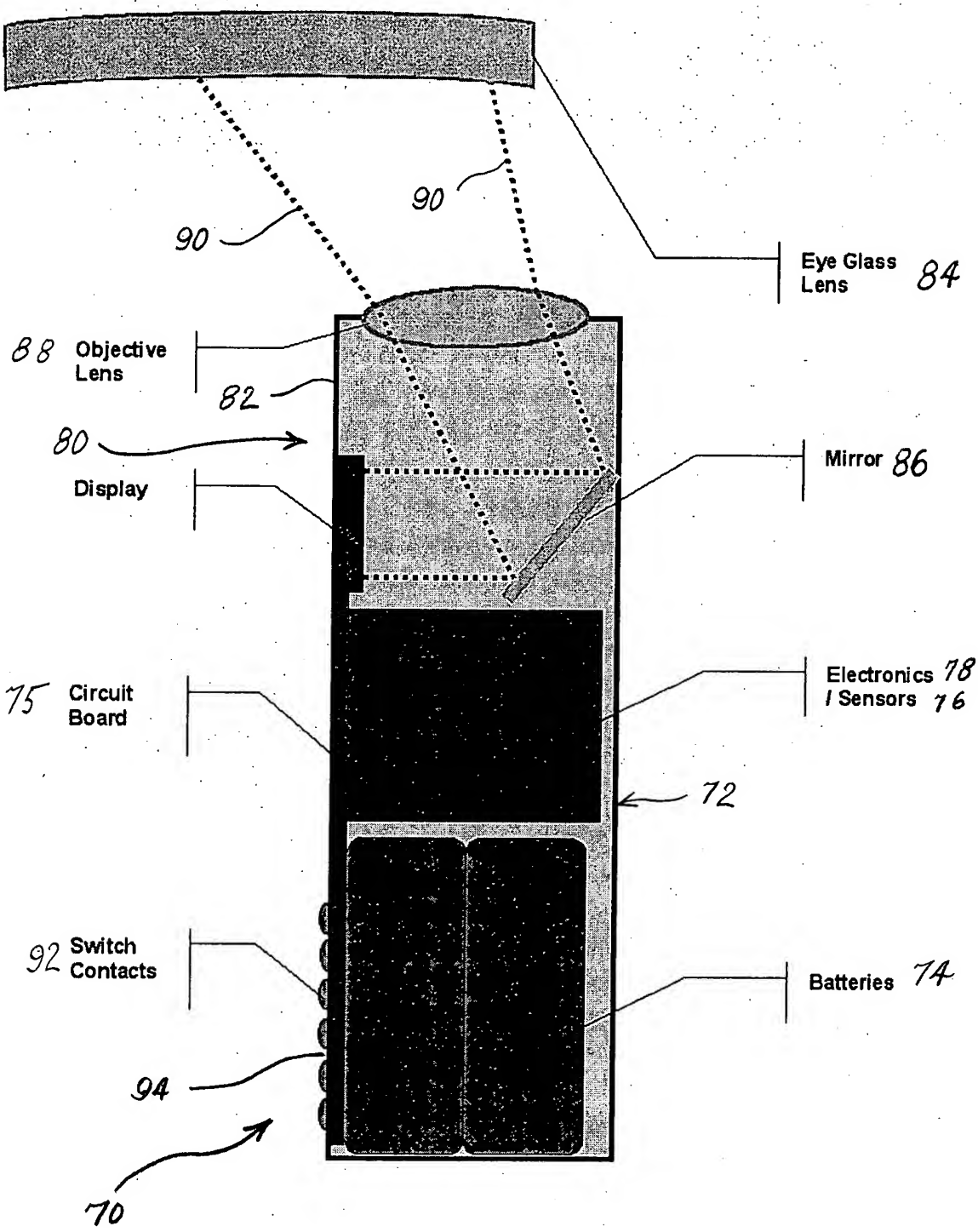
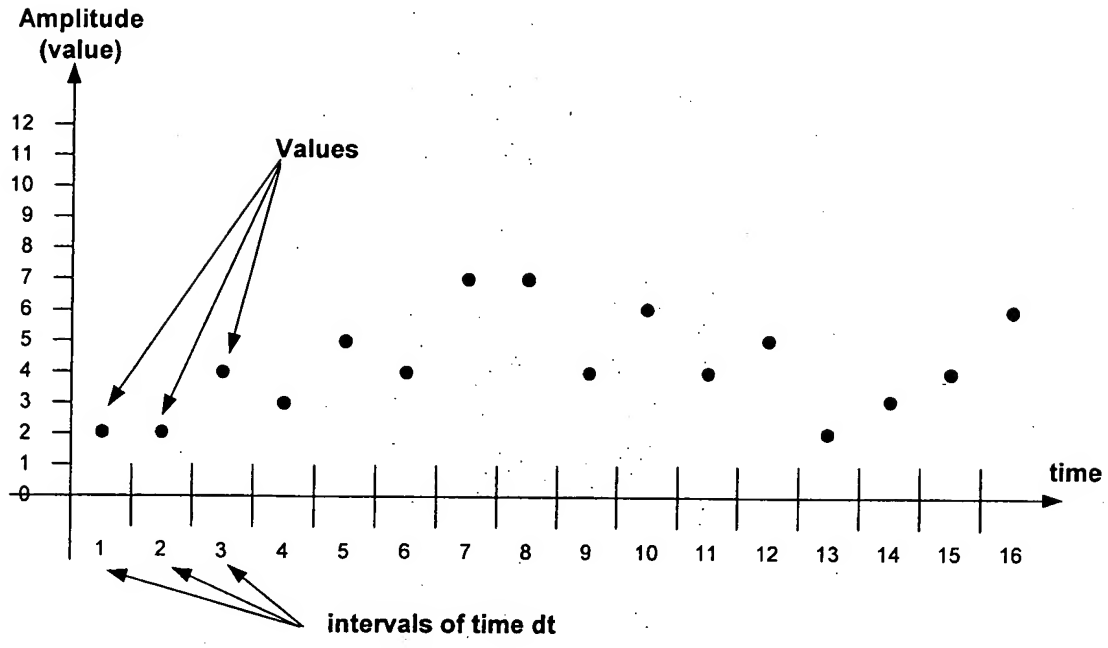

90
90
Eye Glass Lens 84
88 Objective Lens
82
80
Display
Mirror 86
75 Circuit Board
Electronics 78 / Sensors 76
72
92 Switch Contacts
Batteries 74
94
70

Figure 18



- Digital samples provided by the accelerometer every dt interval of time. if the accelerometer is set to sample at 50Hz, dt= 1/50 =20 ms.

Figure 19: Example of digital samples captured by the accelerometer at 50Hz

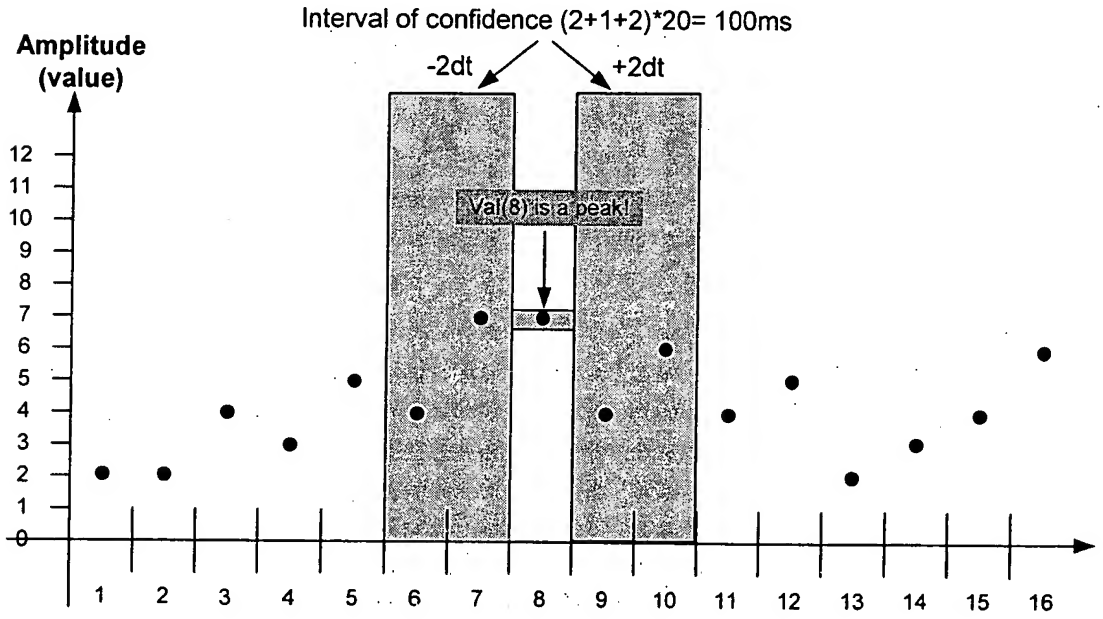


Figure 20: Illustration of an interval of confidence representing 100ms. Sample 8 is a peak centered within an interval of 100ms

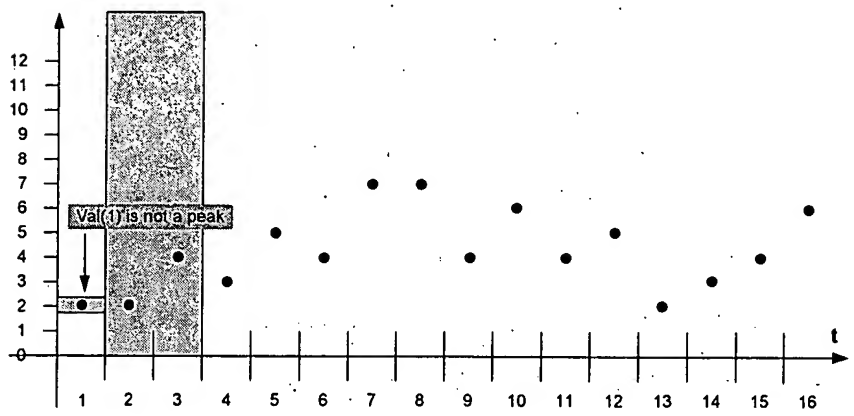


Figure 21: 1st digital sample is compared to its 2 closest neighbors to the right (no data available to the left)

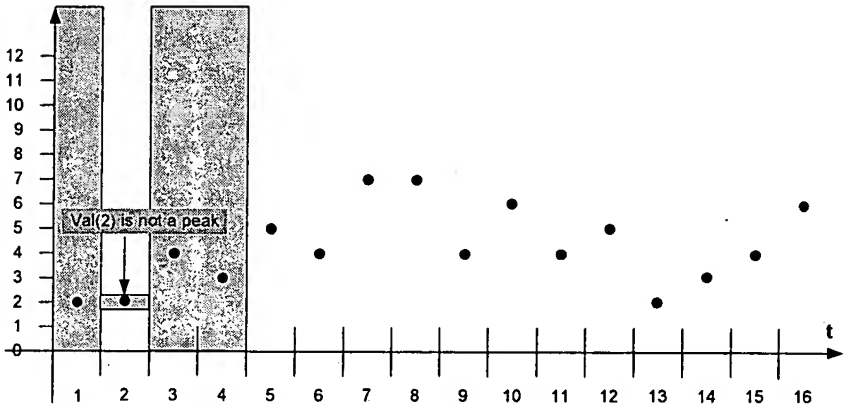


Figure 22: 2nd digital sample is compared to its 2 closest neighbors to the right and unique neighbor to the left

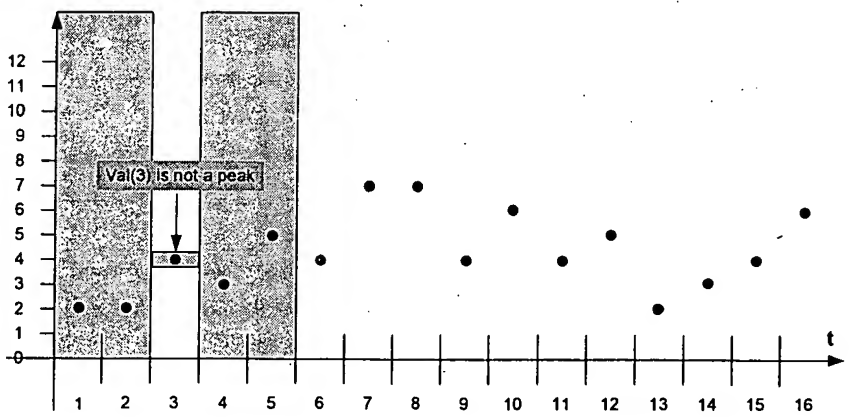


Figure 23: 3rd digital sample is compared to its 2 closest neighbors to the right and left (general situation)

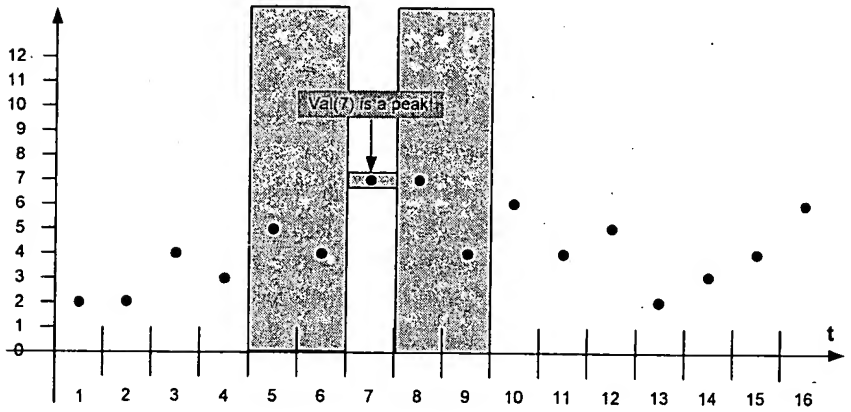


Figure 24: 7th digital sample is a peak

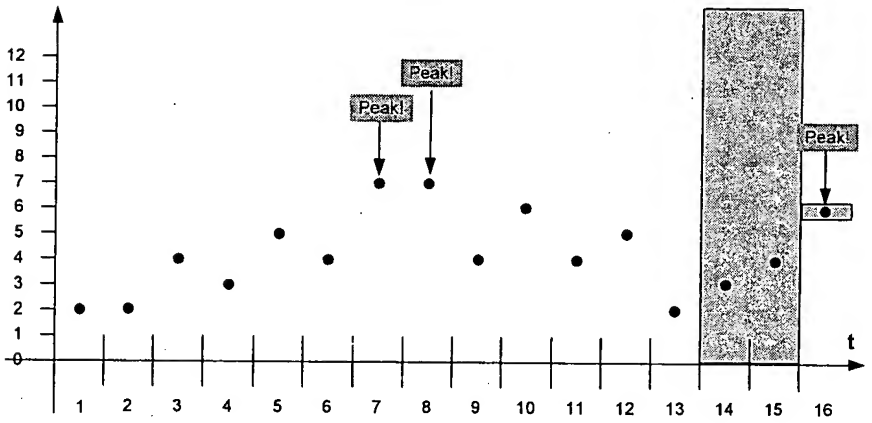


Figure 25: Last sample is compared to its 2 closest neighbors to the left. A total of three peaks were detected by the system

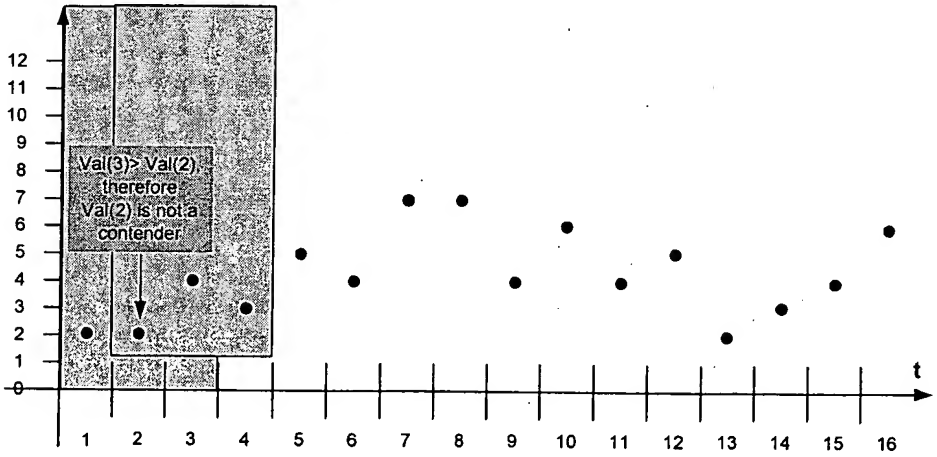


Figure 26: Digital sample 2 is compared to its immediate neighbors to the right and to the left.

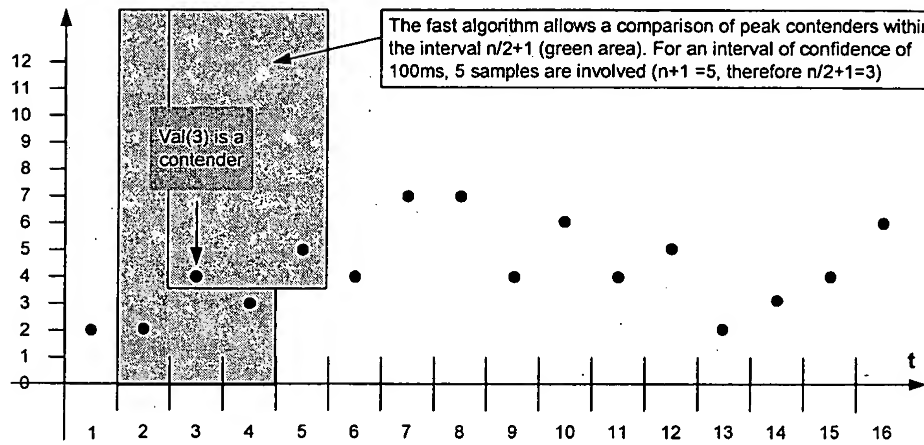


Figure 27

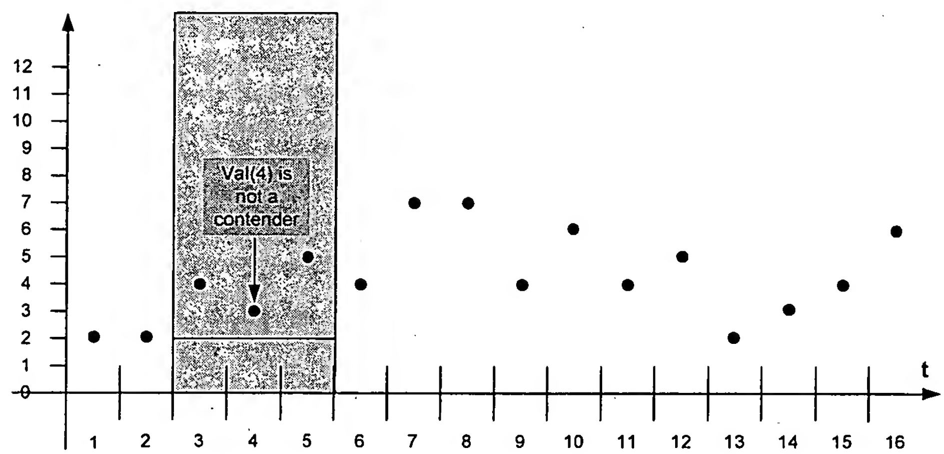


Figure 28

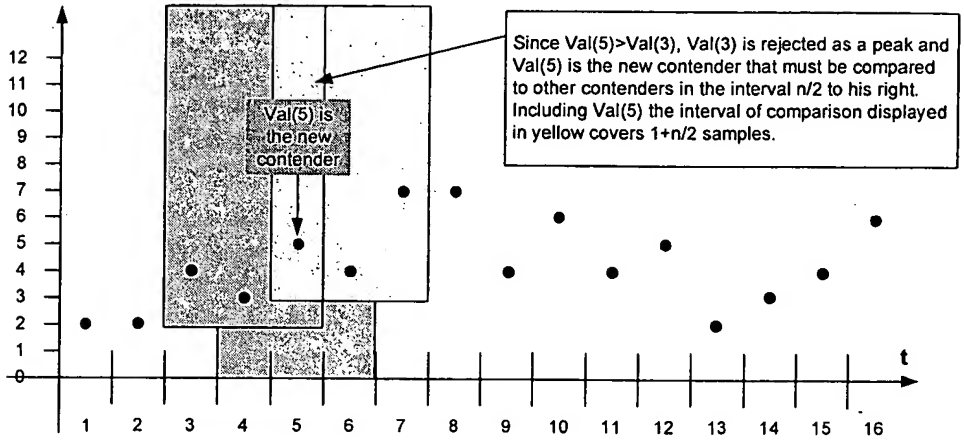


Figure 29

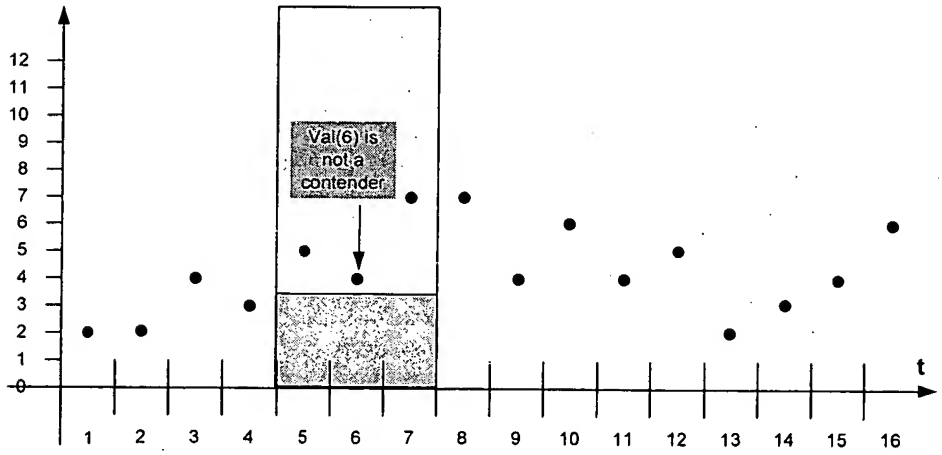


Figure 30

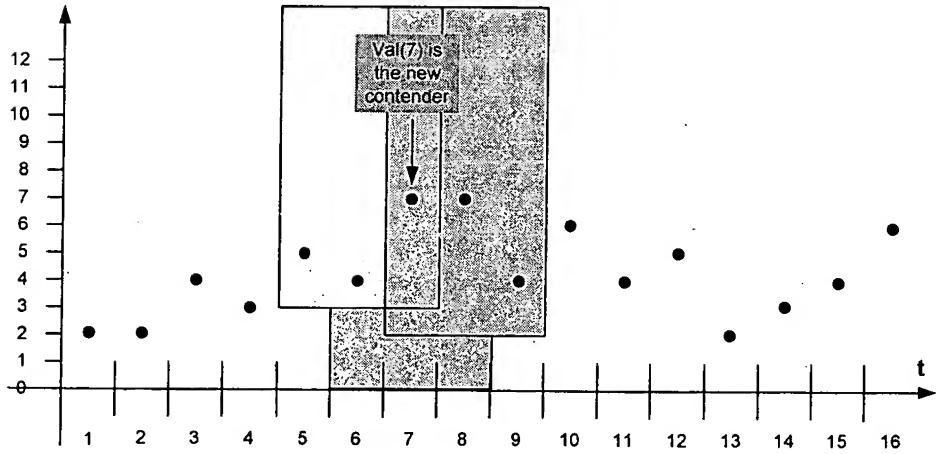


Figure 31

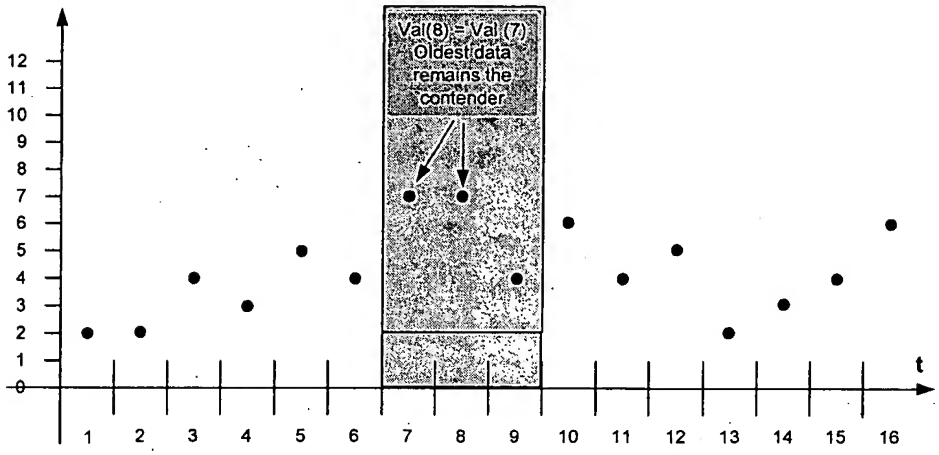


Figure 32

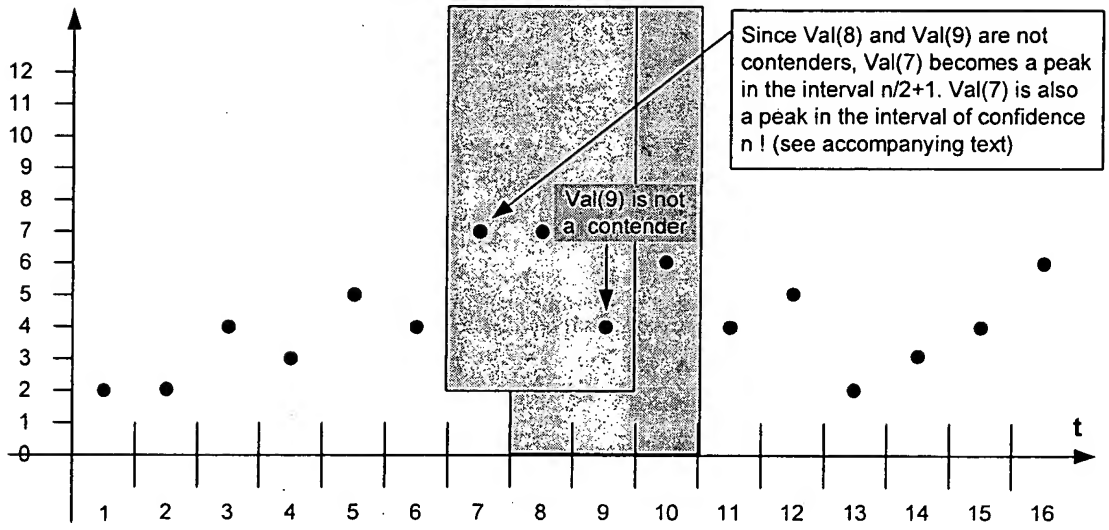


Figure 33

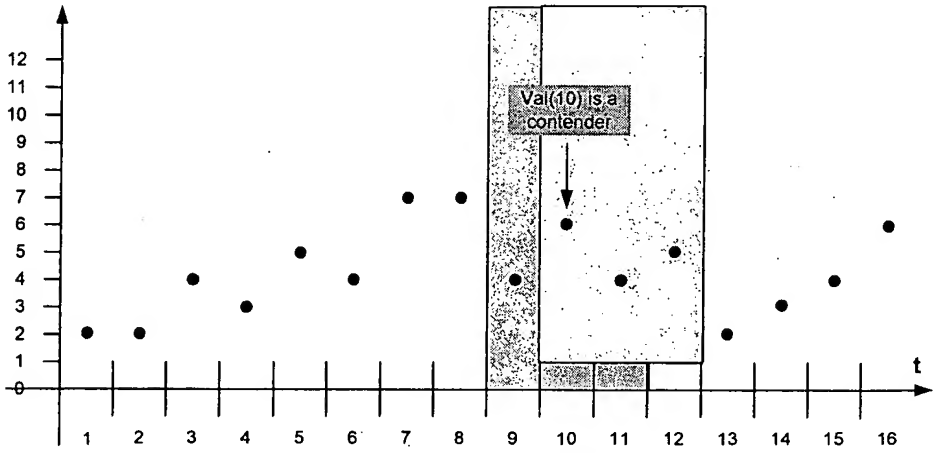


Figure 34

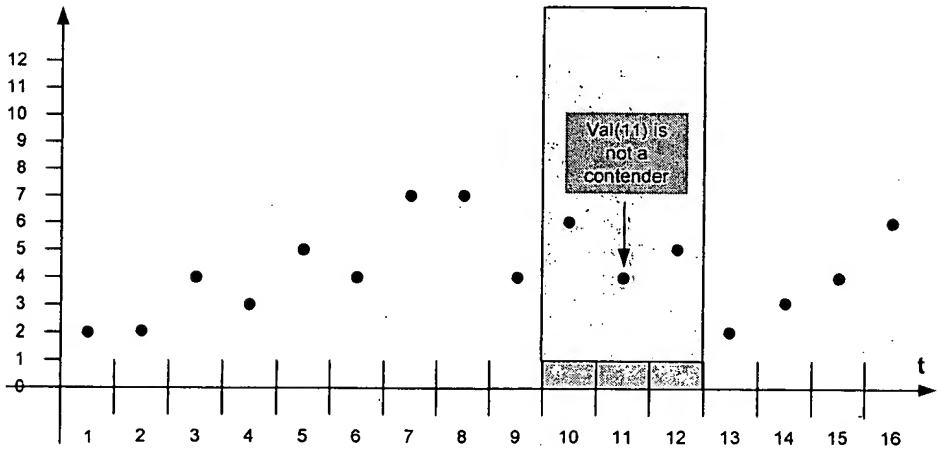


Figure 35

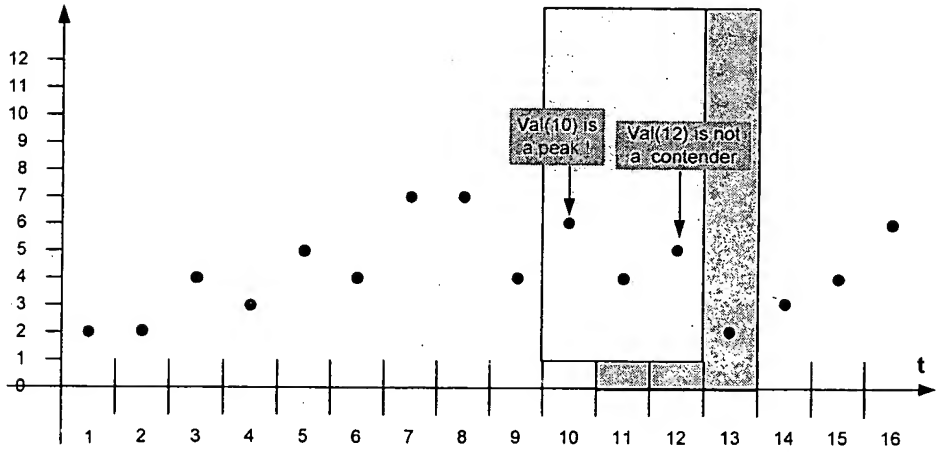


Figure 36

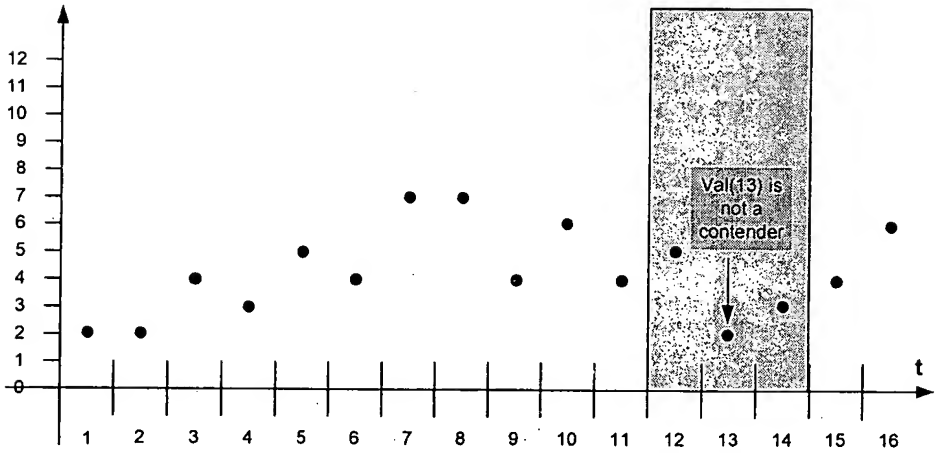


Figure 37

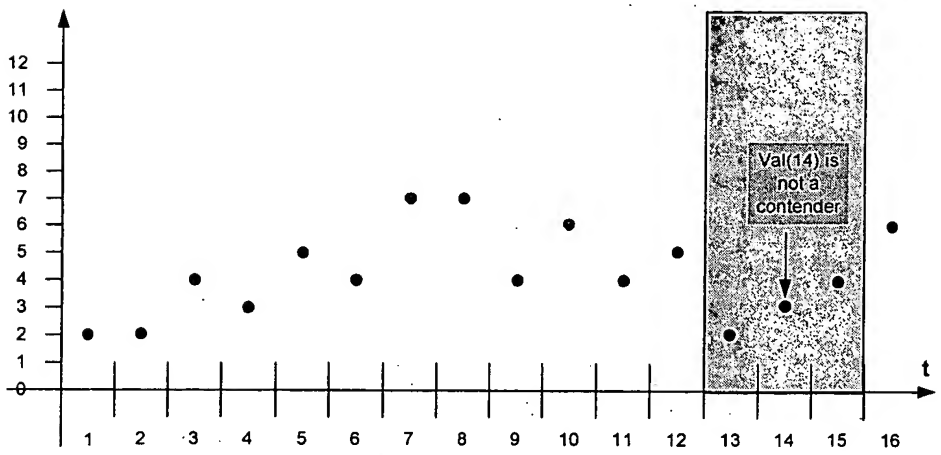


Figure 38

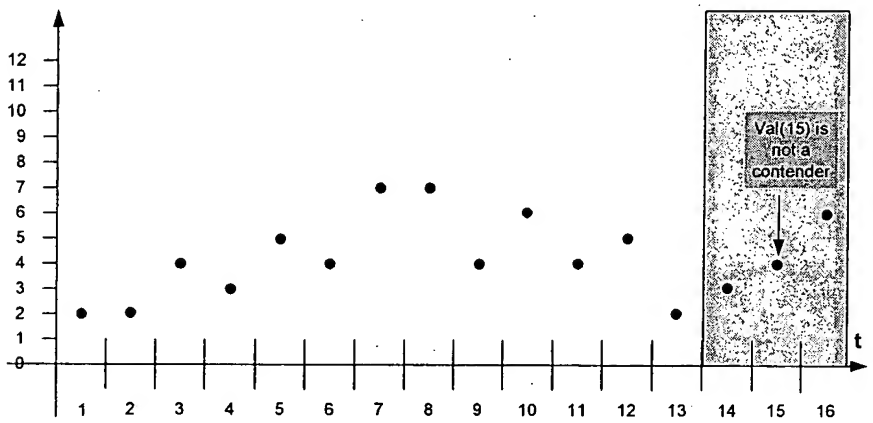


Figure 39

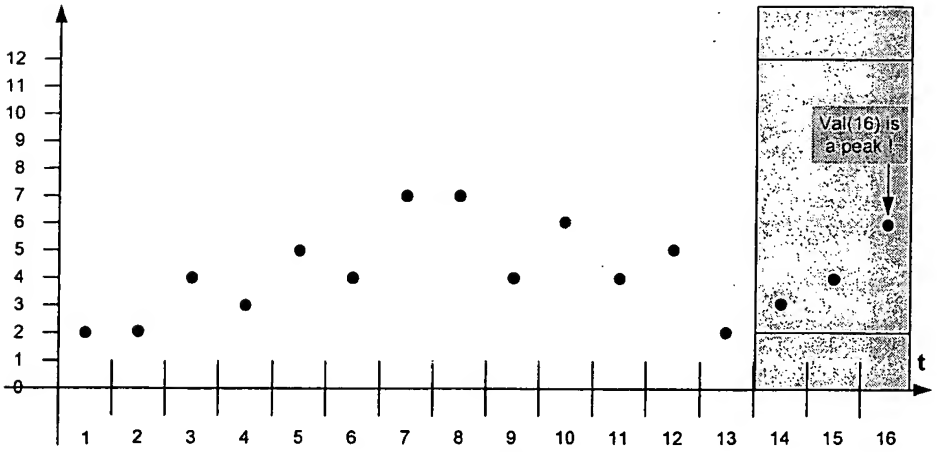


Figure 40

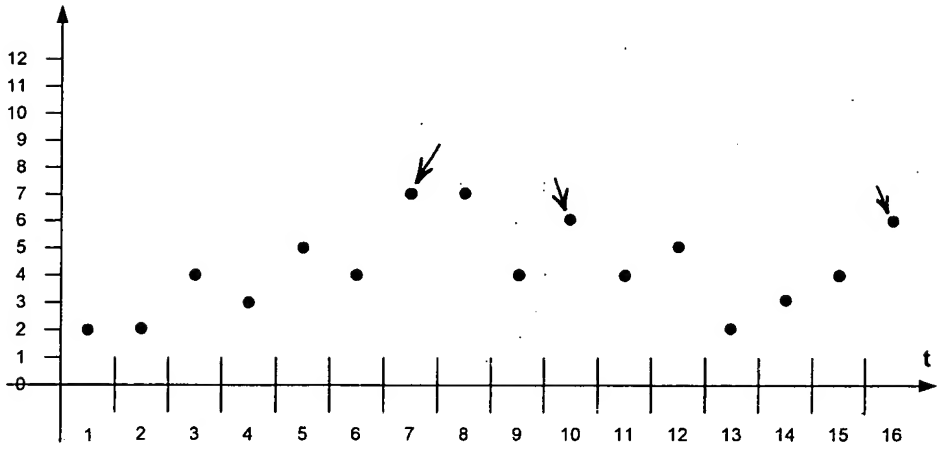


Figure 41: Three peaks

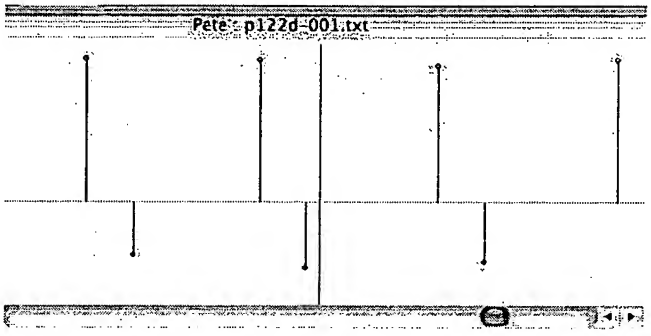


Figure 42: Butterfly (stroke frequency 0.7 Hz). Maxima and minima are displayed

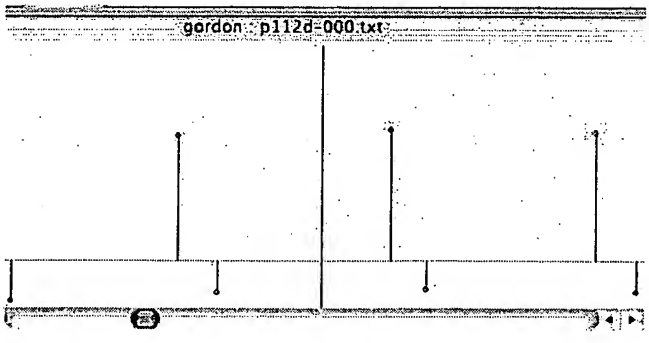


Figure 43: Butterfly. Maxima and minima are displayed

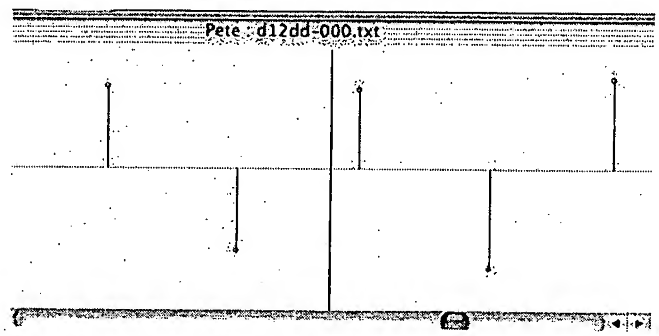


Figure 44: Backstroke. Maxima and minima are displayed

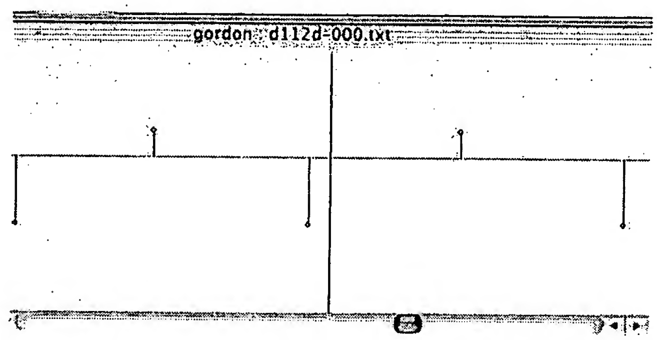


Figure 45: Backstroke (stroke frequency 0.4 Hz). Maxima and minima are displayed

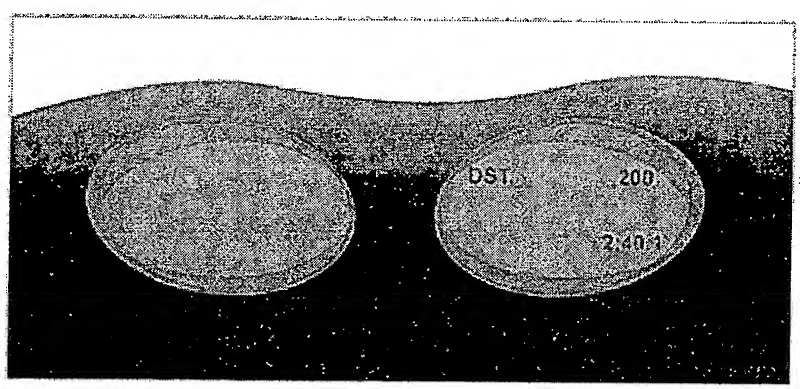


Figure 46